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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,593	03/11/2004	Arun Krishnan	2003P03588 US01	6365

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

ALLISON, ANDRAE S

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/798,593

Applicant(s)

KRISHNAN, ARUN

Examiner

Andrae S. Allison

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/4/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 12 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 12 defines software embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium

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it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed software can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claims to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

The examiner suggest that applicant amends the preamble of claim 12 to read as follows: "A computer program product tangibly embodying a program of instructions stored on a computer readable storage medium executable by a processor to perform method steps for automatic detection of medical conditions in medical images, the method steps comprising"

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 6, 8-13, 17 and 19-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeo (US Patent No.: 7,162,061).

As to independent claim 1, Takeo discloses a method for automatic detection of medical conditions in medical images (abnormal pattern detection method, column 1, lines 7-10), comprising the steps of: receiving image data (e.g. mammogram images, see column 10, lines 7-9); processing the image data to detect potential medical conditions in the image data (detects and process abnormal patterns, e.g. a tumor pattern, see column 11, lines 25-33); adding a mark in the image data that indicates a detected medical condition (e.g. P1, see Fig 2A); adding a false mark in the image data (note that if an abnormal pattern cannot be detected, one can be added, see column 13, lines 61-67); and outputting marked image data comprising one or more marks that indicate a detected medical condition (e.g. P1 and P11, see Fig 2A and also see column 16, lines 1-13).

As to independent claim 12, this claim differs from claim 1 only in that claim 10 is program storage device whereas, claim 1 is method and the limitations a machine and a program of instructions executable by the machine are additively recited in the preamble. Takeo clearly teaches a machine (see Fig 1) and a program of instructions executable (program for making quantitative evaluation; column 12, lines 15-17) by the machine.

As to claim 2, Takeo teaches the method, wherein the step of adding a false mark comprises adding a fixed number of false marks in the image data (see column 13, lines 65-67, where only one abnormal pattern is added).

As to claim 6, Takeo teaches the method, wherein the step of adding a false mark comprises marking a region or structure in the image data that has features similar to a medical condition being evaluated (note that before the abnormal pattern is added, a pattern reader determines if an abnormal pattern exit, see column 13, lines 53-57).

As to claim 8, Takeo teaches the method, wherein the medical condition comprises an abnormal anatomical structure (e.g. a tumor pattern, see column 11, line 29).

As to claim 9, Takeo teaches the method, wherein the medical condition comprises a lesion (e.g., P1, abnormal pattern, see Fig 2A).

As to claim 10, Takeo teaches the method, further comprising rendering the marked image data to display one or more 2D; 3D, or both 2D and 3D images having marks (see Fig 2A).

As to claim 11, Takeo teaches method further comprising the step of not including a mark at a location or region in the image data that is detected as having a

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potential medical condition (note that before the abnormal pattern is added, a pattern reader determines if an abnormal pattern exit, see column 13, lines 53-57).

Claims 1-2 differ from claims 12-13 only in that claims 1-2 are method claims whereas, claims 12-13 are program storage device claims. Thus, claims 12-13 are analyzed as previously discussed with respect to claims 1-2 above.

Claim 17 differ from claim 6 only in that claim 6 is a method claim whereas, claim 17 is a program storage device claim. Thus, claim 17 is analyzed as previously discussed with respect to claim 6 above.

Claims 19-22 differ from claims 8-11 only in that claims 8-11 are method claims whereas, claims 19-22 are program storage device claims. Thus, claims 19-22 are analyzed as previously discussed with respect to claims 8-11 above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 3-5, 7, 14-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeo (US Patent No.: 7,162,061) in view of Ishiguro (US Patent No.: 6,108,439).

As to claim 3, Takeo does not expressly disclose the method wherein the fixed number of false marks are added to random locations in the image data. Ishiguro discloses an ultrasound image processing method that includes wherein the fixed number of false marks are added to random locations in the image data (see column 14, lines 22-37, where markers are arbitrarily inserted into an ultrasound image).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have combined the teaching of Takeo and Ishiguro to arbitrarily or randomly add false marker to medical image data for determining a doctor or radiologist consistently or accuracy in diagnosing a medical condition, furthermore, randomly inserting a signal or marker into image data is well know in the art.

As to claim 4, note the discussion above Ishiguro teaches the method wherein the step of adding a false mark comprises adding a random number of false marks in the image data for each invocation of the automatic detection method (note that the amount of markers to be inserted can be controlled, see column 14, lines 30-37).

As to claim 5, note the discussion above Ishiguro teaches the method, wherein the step of adding a random number of false marks comprises adding no false marks for

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a given invocation or adding one or more false marks for a given invocation (column 13, lines 30-42).

As to claim 7, note the discussion above Ishiguro teaches the method, wherein the step of adding a false mark comprises randomly perturbing a location at which a mark is inserted in the image data to indicate a detected medical condition (since the markers are inserted randomly, a location will be randomly or arbitrary perturbed, see column 14, lines 22-37).

Claims 14-16 differ from claims 3-5 only in that claims 3-5 are method claims whereas, claims 14-16 are program storage device claims. Thus, claims 14-16 are analyzed as previously discussed with respect to claims 3-5 above.

Claim 18 differ from claim 7 only in that claim 7 is a method claim whereas, claim 18 is a program storage device claim. Thus, claim 18 is analyzed as previously discussed with respect to claim 6 above.

Conclusion

The prior art made part of the record and not relied upon is considered pertinent to applicant's disclosure.

Takeo (US Patent No.: 6,418,237) is cited to teach an abnormal pattern detection processing method and system.

Wood et al (US Patent No.: 7,072,501) is cited to teach a graphical user interface for display of anatomical information.

Wang (Pub No.: 2002/0076091) is cited to teach a computer aided diagnosis method and system.

Roehrig et al (Pub No.: 2002/0097902) is cited to teach method and system for the display of regions of interest in medical images.

Inquires

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrae S. Allison whose telephone number is (571) 270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

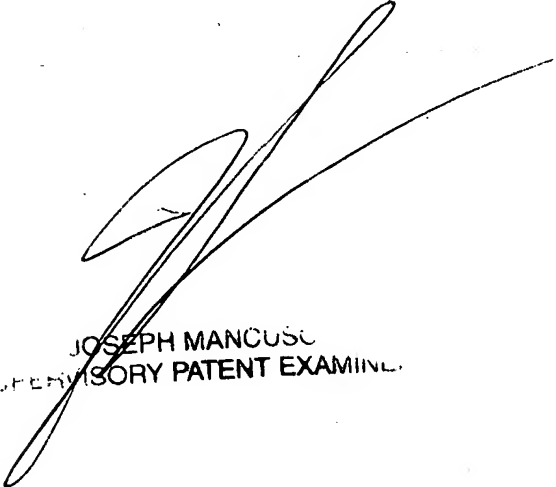
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrae Allison

March 15, 2007

AA -



JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER